

## ABSTRACT

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[PROBLEM] To provide a method and an apparatus for estimating saturated polarization voltage drops, and a method for estimating residual discharge 5 capacity of the battery in order to measure accurately the state of the battery.

[MEANS FOR SOLVING PROBLEM] The steps are: measuring a discharge current and a terminal voltage at high rate discharge; finding a quadratic approximation formula expressing the polarization voltage drop corresponding to the increasing discharge current at high rate discharge according to the 10 measured discharge current and the terminal voltage; finding a maximum polarization voltage drop and a discharge current corresponding to the maximum polarization voltage drop according to the quadratic approximation formula; computing a quotient by dividing the maximum polarization voltage drop by the discharge current corresponding to the maximum polarization 15 voltage drop; computing a product by multiplying the quotient by the maximum current; computing a sum by adding the product to the polarization voltage drop corresponding to the maximum current according to the approximation formula; and regarding the sum as the saturated polarization voltage drop.

[CHOSEN DRAWING] Fig. 3